REMARKS

Reconsideration and allowance of the present application based on the following remarks are respectfully requested.

The specification has been amended to include part reference numbers and to make reference to specific figures. Claims 23, 24, and 26 have been amended. Accordingly, after entry of this amendment, claims 1-30 will be pending.

In the Office Action dated September 16, 2002, claim 26 was objected to because the preamble of the claim is directed to a mask handling device and the claim depended from a method claim. Claim 26 has been amended to reflect its proper dependency. Applicants respectfully request that the objection be withdrawn.

In the Office Action, the drawings were objected to under 37 C.F.R. § 1.83(a) for not showing every feature specified in the claims. Specifically, the features of "heater," "plate," and "cooler" claimed in claims 28-29 were not shown in the figures. Applicants respectfully request that the additional drawing contained in the attached Request for Approval of Drawing Corrections be approved. Fig. 15a shows the heater 55, the cold plate 56, and the cooler 57, as described in the specification starting at p. 20, line 12. No new matter is introduced. Accordingly, Applicants respectfully request that the objection to the drawings be withdrawn.

In the Office Action, claims 1-24 were rejected under 35 U.S.C. § 102(e) as being anticipated by Kuo (U.S. Patent 6,359,747). Applicants respectfully traverse this rejection.

Claim 1 is patentably distinguishable from Kuo at least because claim 1 recites a combination that includes, for example, a substrate table constructed to support a substrate, and a particle shield. A substrate table is not an inherent device for supporting the substrate, as demonstrated by Kuo. Kuo teaches that the disk can be attached to a drive motor spindle. (Kuo at col. 3, lines 24-25.) Fig. 4A illustrates a disk supported by a spindle that is attached to the motor. (Kuo at Fig. 4A.) Also, Kuo does not disclose a particle shield. Instead, Kuo discloses using an electromagnet 426 to establish a *disk conditioning field* 430 to establish a uniform magnetic direction and field strength on the disk, not a particle shield. (Kuo at col. 5, lines 47-52.)

Although the Office Action states "the functional recitation that 'so as to prevent particles from [sic] becoming incident on an object to be shielded [sic]' has not been given patentable weight" under *Ex Parte Masham*, 2 USPQ 1647 (1987), Applicants respectfully submits that the case has been misapplied to these facts. First, the structural limitation in the claim "a particle shield" is not met by the reference. Second, *Ex Parte Masham* merely states

that it *may* be appropriate to give no patentable weight to a field of use limitation.[1] Thus, *Ex Parte Masham* has no application here because Kuo does not disclose all of the elements recited in claim 1.

Claim 23 is patentably distinguishable from Kuo at least because claim 23 recites a method that includes, for example, providing a substrate which is at least partially covered by a layer of radiation sensitive material. In contrast to the features in claim 23, Kuo does not disclose providing a substrate which is at least partially covered by a layer of radiation sensitive material. Instead, Kuo teaches establishing a substantially magnetically uniform disk surface prior to exposing the pattern area to a magnetic field. (Kuo at col. 2, lines 24-26.) Moreover, Kuo fails to teach or suggest "generating an electromagnetic field so as to prevent particles to become incident on an object within said illumination system or said projection system" as recited in claim 23. Again, for the reasons stated above, *Ex Parte Masham* does not apply here.

Accordingly, Applicants respectfully submit that claims 1 and 23, and the claims that depend from them, are patentable over Kuo and respectfully request that the rejection be withdrawn.

In the Office Action, claims 1-27 and 30 were rejected under 35 U.S.C. § 102(b) as being anticipated by Ward (U.S. Patent 4,695,732). Applicants respectfully traverse this rejection.

Claims 1 and 25 are patentably distinguishable from Ward because claims 1 and 25 recite combinations that include, for example, a *particle shield*. Ward does not disclose a particle shield. Instead, Ward discloses an electron image projector that projects a beam of electrons emitted by a cathode onto a target under the action of a substantially uniform electric field and includes means for producing a substantially uniform magnetic field parallel to the electric field *to focus* a patterned beam of electrons *onto the target*. (Ward at col. 1, lines 36-53.) Thus, while claims 1 and 25 claim combinations that include a shield to keep particles *away* from an object to be shielded, Ward teaches using a magnetic field to focus electrons *onto* a target. (Ward at col. 1, lines 36-53.)

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[1] Specifically, in *Ex Parte Masham* a claimed device for operating when completely submerged in developer material was not patentably distinct where the prior art taught a device with the same structural requirements but was only partially submerged in developer material.

Claim 23 is patentably distinguishable from Ward because claim 23 recites a method that includes, for example, generating an electromagnetic field so as to *prevent* particles to become incident on an object. Ward does not disclose a method that includes generating an electromagnetic field so as to prevent particles from becoming incident on an object. Instead, Ward teaches using a magnetic field to focus electrons onto a target. (Ward at col. 1, lines 36-53.)

Accordingly, Applicants respectfully submit that claims 1, 23, and 25, and the claims that depend from them, are patentable over Ward and respectfully request that the rejection be withdrawn.

In the Office Action, claims 1-27 and 30 were rejected under 35 U.S.C. § 102(e) as being anticipated by Klebanoff (U.S. Patent 6,169,652). Applicants respectfully traverse this rejection.

Claims 1 and 25 are patentably distinguishable from Klebanoff because claims 1 and 25 recite combinations that include, for example, a particle shield. Klebanoff does not disclose a particle shield. Instead, Klebanoff discloses an electrostatically screened, voltage-controlled electrostatic chuck. (Klebanoff at col. 2, lines 35-36.) Applicants cannot be certain what item in FIG. 1 is alleged to be a particle shield. The "shields" 7 and 8 serve only to eliminate stray electric fields. (Klebanoff at col. 4, lines 9-13, 32-38.) The electrodes 3A, 3B serve only to hold a substrate to the chuck. (Klebanoff at col. 4, lines 42-56.) There is no particle shield as recited in claims 1 and 25.

Claim 23 is patentably distinguishable from Klebanoff because claim 23 recites a method that includes generating an *electromagnetic* field. Klebanoff does not disclose generating an electromagnetic field, but instead discloses an *electrostatically* screened electrostatic chuck. (Klebanoff at col. 2, lines 35-36.)

In the Office Action, claims 28-29 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kuo or Ward or Klebanoff in view of McCullough (U.S. Patent 6,445,439).

Claims 28-29 depend from independent claim 25. Claim 25 recites a combination that includes a chamber, a mask contained in the chamber, and a particle shield.

As discussed above, Kuo does not disclose a particle shield. Instead, Kuo discloses using an electromagnet 426 to establish a *disk conditioning field* 430 to establish a uniform magnetic direction and field strength on the disk. (Kuo at col. 5, lines 47-52.) Also, no where does Kuo disclose a chamber or a mask contained in a chamber. The added features of claims 28-29, even if disclosed by McCullough, which Applicants do not concede, do not make up for the deficiency.

As discussed above, Ward does not disclose a particle shield. Instead, Ward teaches using a magnetic field to focus electrons *onto* a target. (Ward at col. 1, lines 36-53.) The added features of claims 28-29, even if disclosed by McCullough, which Applicants do not concede, do not make up for the deficiency.

As discussed above, Klebanoff does not disclose a particle shield. Instead, Klebanoff discloses an electrostatically screened, voltage-controlled electrostatic chuck. (Klebanoff at col. 2, lines 35-36.) Applicants cannot be certain what item in FIG. 1 is alleged to be a particle shield. The "shields" 7 and 8 serve only to eliminate stray electric fields. (Klebanoff at col. 4, lines 9-13, 32-38.) The electrodes 3A, 3B serve only to hold a substrate to the chuck. (Klebanoff at col. 4, lines 42-56.) There is no particle shield as recited in claim 25. The added features of claims 28-29, even if disclosed by McCullough, which Applicants do not concede, do not make up for the deficiency.

Claim 28 claims a mask handing device with a particle shield that includes a heater for maintaining the mask at a temperature greater than its surroundings. Claim 29 claims a mask handling device with a particle shield that includes a plate and a cooler for maintaining the plate at a temperature less than the temperature of the mask.

McCullough discloses a thermal management device that substantially reduces *thermal distortion* in a reticle. (McCullough at col. 3, lines 19-21.) There is no motivation to use the thermal management device as disclosed by McCullough as a particle shield in a mask handling device.

As a result, Applicants respectfully submit that Kuo or Ward or Klebanoff and McCullough do not teach or suggest each and every feature recited by claims 28-29 and, as a result, a *prima facie* case of obviousness cannot be made. Accordingly, Applicants respectfully submit that claims 28-29 are patentable over Kuo or Ward or Klebanoff in view of McCullough and respectfully request that the rejection be withdrawn.

In view of the foregoing, the claims are now believed to be in form for allowance, and such action is hereby solicited. If any point remains in issue which the Examiner feels may be best resolved through a personal or telephone interview, please contact the undersigned at the telephone number listed below.

Attached is a marked-up version of the changes made to the specification and claims by the current amendment. The attached Appendix is captioned **"Version with markings to show changes made"**.

All objections and rejections having been addressed, it is respectfully submitted that the present application is in a condition for allowance and a Notice to that effect is earnestly solicited.

Respectfully submitted,

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Enclosure: Appendix

APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

The specification is changed as follows:

At page 20, starting at line 8:

In an eleventh embodiment, which is [not]illustrated in Figs. 15a and 15b, particles are prevented from colliding with and sticking to the mask MA in a lithographic apparatus, a mask handling apparatus or a mask storage box by providing a temperature difference between the mask and its surroundings.

At page 20, starting at line 12:

The temperature difference can be provided by providing a heater 55, e.g. a lamp, to heat the mask and/or by providing a cold plate 56, cooled by a suitable cooler 57, in the vicinity of the pattern surface of the mask MA. The presence of a cold surface near the mask reduces particle adherence to the mask because particles colliding with the cold surface will tend to lose kinetic energy and hence are more likely to stick to the cold surface. Heating the mask to a temperature higher than its surrounding causes a continuous thermophoretic effect.

At page 20, starting at line 21:

In a twelfth embodiment, [also] not illustrated, a plate matching the mask in area may be positioned underneath its patterned side except during exposure periods. The shielding plate may be spaced a distance in the range of from 5mm to 20mm from the mask and may be constructed as a particle shield according to any or all of the ninth, tenth and eleventh embodiments.

IN THE CLAIMS:

23. (Amended) A device manufacturing method with an illumination system and projection system, comprising[the steps of]:

providing a substrate which is at least partially covered by a layer of radiation sensitive material;

providing a projection beam of radiation;

using patterning structure to endow the projection beam with a pattern in its cross section;

projecting the patterned beam of radiation onto a target portion of the layer of radiation sensitive material; and

generating an electromagnetic field so as to prevent particles to become incident on an object within said illumination system or said projection system.

24. (Amended) A device manufactured in accordance with the method of Claim 2[2]3.

26. (Amended) A mask handling device according to claim 2[4]5, wherein said particle shield comprises means for generating an electromagnetic field so as to prevent particles to become incident on at least the patterned surface of said mask.

End of Appendix